We Claim:

1. A cutting head for rotary trimmers using at least one fixed length of flexible line as a cutting implement comprising:

a housing defining an annular wall portion, a perimeter wall portion axially spaced from said annular wall portion and having at least one opening therein, a line support wall adjacent each said opening and extending inwardly therefrom, at least a portion of said wall having a wear resistant surface, a channel extending radially inwardly from each said opening along said support wall for receiving a length of flexible line therein, a post adjacent each said channel proximate said opening in said perimeter wall portion of said housing;

a line engagement cam mounted on each said post for pivotal movement about a central axis of said post, each cam being configured so as to be symmetrical about said central axis and defining a plurality of line engaging pointed teeth spaced along an end surface of the cam from an outermost tooth to an innermost tooth such that said teeth generally project from said outermost tooth to said innermost tooth into each said channel at increasing angles of inclination with respect to the wear resistant surface of said support wall and at decreasing distances from said surface; and

a spring member operatively connected with each said cam for urging said curvilinear surface on said cam in a first direction toward said opening.

2. The cutting head of claim 1 including at least one stop for limiting pivotal movement of each said cam in said first direction.

3. The cutting head of claim 1 wherein said wear resistant surface is formed of metal.

4. The cutting head of claim 1 wherein said wear resistant surface is formed of stainless steel.

5. The cutting head of claim 1 including a cover adapted to mate with and be releasably secured to said housing, said cover defining a radially extending projection extending along and across said channel upon said cover being secured to said housing so as to form a bottom wall for said channel to retain a length of cutting line within each said channel as said line is inserted through said channel.

6. The cutting head of claim 1 including a cover adapted to mate with and be releasably secured to said housing, said cover including a plurality of arcuate projections disposed outwardly of said post and adjacent said cam upon said cover being secured to said housing whereby said cam is maintained in a horizontal disposition within said housing.

7. The cutting head of claim 1 wherein at least a substantial portion of said end surface of each cam is curvilinear and configured to trace a segment of a constant radius arc about a fixed point located inwardly of and laterally from the central axis of said post and at least a majority of said plurality of teeth are disposed along said curvilinear portion of said end surface.

8. The cutting head of claim 1 wherein at least a substantial portion of said end surface of each cam is curvilinear and configured to trace a segment of a constant radius arc about a fixed point located inwardly of and laterally from the central axis of said post, a majority of said plurality of teeth are disposed along said curvilinear portion of said end surface and a minority of said teeth are disposed outwardly on said end surface of said cam from said curvilinear position thereof and a shorter radial distance from said fixed point than said majority of teeth disposed on said curvilinear portion of said end surface.

9. The cutting head of claim 5 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

10. The cutting head of claim 5 wherein said housing defines an interior circular wall portion inwardly spaced from said perimeter wall portion, said interior wall portion circumscribing a central area and defining at least one opening therein, each said opening being radially aligned with each said channel in said housing for communicating said channel with said central area and wherein said cover includes a central opening therein axially aligned with said central area in said housing upon said cover being secured to said housing for providing external access to said central area whereby a length of flexible line inserted through each said channel into said central area can be grasped in said central area and pulled inwardly through said channel and from said head to effect removal of worn and broken line.

11. The cutting head of claim 5 wherein said cover additionally includes a plurality of arcuate projections, said arcuate projections being disposed outwardly of said post and adjacent said cam upon said cover being secured to said housing whereby said cam is maintained in a horizontal disposition within said housing.

12. The cutting head of claim 6 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to

allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

13. The cutting head of claim 7 including at least one stop for limiting pivotal movement of said cam in said first direction.

14. The cutting head of claim 7 wherein said wear resistant surface is formed of metal.

15. The cutting head of claim 7 wherein said wear resistant surface is formed of stainless steel.

16. The cutting head of claim 8 wherein said minority of said teeth comprises two teeth including said outermost tooth and wherein said outermost tooth is disposed a shorter radial distance from said fixed point than the other tooth in said minority teeth.

17. The cutting head of claim 10 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to

allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

18. A cutting head for rotary trimmers using at least one fixed length of flexible line as a cutting implement comprising:

a housing defining an annular wall portion, a perimeter wall portion axially spaced from said annular wall portion and having at least one opening therein, a line support wall adjacent each said opening and extending inwardly therefrom, at least a portion of said wall having a wear resistant surface, a channel extending radially inwardly from each said opening along a support wall for receiving a length of flexible line therein, and a post adjacent each said channel proximate each said opening in said perimeter wall portion of said housing;

a line engagement cam mounted on each said post for pivotal movement about a central axis of said post, each cam being configured so as to be symmetrical about said central axis and defining a plurality of line engaging pointed teeth spaced along an end surface of the cam from an outermost tooth to an innermost tooth, at least a portion of said end surface being curvilinear and configured to trace a segment of a constant radius about a fixed point located inwardly of and laterally from the central axis of said post, at least a majority of said line engaging teeth being disposed along said curvilinear portion of said end

surface whereby line engaging teeth generally project into each said channel at increasing angles of inclination with respect to the wear resistant surface of the support wall extending along the channel and at decreasing distances from said surface; and

a spring member operatively connected with each said cam for pivoting said cam in said first direction.

19. The cutting head of claim 18 including at least one stop for limiting pivotal movement of each said cam in said first direction.

20. The cutting head of claim 18 wherein said wear resistant surface is formed of metal.

21. The cutting head of claim 18 including a cover adapted to mate with and be releasably secured to said housing, said cover defining a radially extending projection extending along and across said channel upon said cover being secured to said housing so as to form a bottom wall for each said channel to retain a length of cutting line within each said channel as said line is inserted through said channel.

22. The cutting head of claim 18 including a cover adapted to mate with and be releasably secured to said housing, said cover including a plurality of arcuate projections disposed outwardly of said post and adjacent said cam upon said cover being secured to said housing whereby said cam is maintained in a horizontal disposition within said housing.

23. The cutting head of claim 18 wherein a minority of said line engaging teeth spaced along said end surface of said cam are disposed outwardly along said surface from said curvilinear portion thereof and a shorter radial distance from said fixed point than said majority of teeth disposed on said curvilinear portion of said end surface.

24. The cutting head of claim 18 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

25. A cutting head of claim 21 wherein said housing defines an interior circular wall portion inwardly spaced from said perimeter wall portion, said interior wall portion circumscribing a central area and defining an opening therein, each said opening being radially aligned with each said channel in said housing for communicating said channel with said central area and wherein said cover includes a central opening therein axially aligned with said central area in said housing upon said cover being secured to said housing for providing external access to said central area whereby a length of flexible line inserted through each said channel into said central area can be grasped in said central area and pulled inwardly through the channel and from said head to effect removal of worn and broken line.

26. The cutting head of claim 21 wherein said cover additionally includes a plurality of arcuate projections, said arcuate projections being disposed outwardly of said post and adjacent said cam upon said cover being secured to said housing whereby said cam is maintained in a horizontal disposition within said housing.

27. The cutting head of claim 23 wherein said minority of said teeth comprises two teeth including said outermost tooth and wherein said outermost tooth is disposed a shorter radial distance from said fixed point than the other tooth in said minority teeth.

28. The cutting head of claim 25 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

29. A cutting head for rotary trimmers using at least one fixed length of flexible line as a cutting implement comprising:

a housing defining an annular wall portion, a perimeter wall portion axially spaced from said annular wall portion and having at least one opening therein, a line support wall adjacent each said opening and extending inwardly therefrom, at least a portion of said wall having a wear resistant surface, a channel extending radially inwardly from each said opening along a support wall for receiving a length of flexible line therein, and a post adjacent each said channel proximate each said opening in said perimeter wall portion of said housing;

a line engagement cam mounted on each said post for pivotal movement about a central axis of said post, each cam being configured so as to be symmetrical about said central axis and defining a pair of opposed end surfaces and first and second pluralities of line engaging pointed teeth, one of said pluralities of teeth being spaced along each end surface from an outermost tooth to an innermost

tooth such that one of said pluralities of teeth on each said cam generally projects into each said channel at increasing angles of inclination with respect to the wear resistant surface of the support wall extending along the channel and at decreasing distances from said surface such that upon inserting a length of flexible line through said opening and along said channel and pivoting said cam about said post in a first direction toward said opening, at least three of said teeth projecting into said channel will engage said line and prevent retraction of said line from said head; and

a spring member operatively connected with each said cam for pivoting said cam in said first direction.

30. The cutting head of claim 29 including at least one stop for limiting pivotal movement of each said cam in said first direction.

31. The cutting head of claim 29 wherein said wear resistant surface is formed of metal.

32. The cutting head of claim 29 wherein the opposed end surfaces on each said cam are disposed on opposed sides of the central axis of the post on which the cam is mounted and are spaced equal distances from said axis and wherein each of the cams is configured so as to be reversably mounted on said post

whereby upon one or more of the teeth in the plurality of teeth projecting into said channel becoming worn or damaged, said cam can be removed from said post, rotated 180° with respect to said post and re-mounted thereon whereupon the other plurality of teeth generally projects from an outermost tooth to an innermost tooth into said channel in said increasing angles of inclination with respect to said wear resistant surface and at said decreasing distances therefrom.

33. The cutting head of claim 29 wherein said housing further includes one or more air vents in an upper portion thereof communicating with said central opening in said cover upon said cover being secured to said housing so as to allow air flow through said housing to said cover to prevent the creation of a low pressure area adjacent said opening in said cover during rotation of said cutting head.

34. The cutting head of claim 29 including a cover adapted to mate with and be releasably secured to said housing, said cover defining a radially extending projection extending along and across said channel upon said cover being secured to said housing so as to form a bottom wall for said channel to retain a length of cutting line within each said channel as said line is inserted through said channel.

35. The cutting head of claim 29 including a cover adapted to mate with and be releasably secured to said housing, said cover including a plurality of arcuate projections disposed outwardly of said post and adjacent said cam upon said cover being secured to said housing whereby said cam is maintained in a horizontal disposition within said housing.

36. The cutting head of claim 34 wherein said housing defines an interior circular wall portion inwardly spaced from said perimeter wall portion, said interior wall portion circumscribing a central area and defining at least one opening therein, each said opening being radially aligned with each said channel in said housing for communicating said channel with said central area and wherein said cover includes a central opening therein axially aligned with said central area in said housing upon said cover being secured to said housing for providing external access to said central area whereby a length of flexible line inserted through each said channel into said central area can be grasped in said central area and pulled inwardly through said channel and from said head to effect removal of worn and broken line.

37. The cutting head of claim 34 wherein said cover additionally includes a plurality of arcuate projections, said arcuate projections being disposed outwardly of said post and adjacent said cam upon said cover being secured to said

housing whereby said cam is maintained in a horizontal disposition within said housing.

38. A cutting head for rotary trimmers using at lest one fixed length of flexible line as a cutting implement comprising:

a housing defining an annular wall portion, a perimeter wall portion axially spaced from said annular wall portion and having at least one opening therein, a line support wall adjacent each said opening and extending inwardly therefrom, at least a portion of said wall having a wear resistant surface, a channel extending radially inwardly from each said opening along a support wall for receiving a length of flexible line therein, and a post adjacent each said channel proximate each said opening in said perimeter wall portion of said housing;

a line engagement cam mounted on each said post for pivotal movement about a central axis of said post, each cam being configured so as to be symmetrical about said central axis and defining a pair of opposed end surfaces and first and second pluralities of line engaging pointed teeth, one of said pluralities of teeth being spaced along each end surface from an outermost tooth to an innermost tooth, at least a portion of each end surface being curvilinear and configured to trace a segment of a constant radius about a fixed point, one of said points being located inwardly of and laterally from the central axis of said post, the other of said points being located outwardly of and laterally from said central axis of said post,

said fixed points being spaced diametrically across said central axis of said post and wherein at least a majority of the line engaging teeth in each plurality of teeth is disposed along a curvilinear portion of one of said end surfaces such that line engaging teeth on one of said surfaces generally project into each said channel at increasing angles of inclination with respect to the wear resistant surface of the support wall extending along the channel and at decreasing distances from said surface; and

a spring member operatively connected with each said cam for pivoting said cam in a first direction.

39. The cutting head of claim 38 including at least one stop for limiting pivotal movement of each said cam in said first direction.

40. The cutting head of claim 38 wherein said wear resistant surface is formed of metal.

41. The cutting head of claim 38 wherein a minority of said teeth in each of said pluralities thereof are disposed a shorter radial distance from one of said fixed points than the majority of said teeth on said end surface.